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Malaria kills more than Ebola virus disease



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See [Articles](#) page 1017

In *The Lancet Infectious Diseases*, Mateusz Plucinski and colleagues¹ have documented—using the best possible methods despite the circumstances—the effect of the Ebola-virus-disease epidemic on malaria control activities in Guinea, a country with intense, all-year, ubiquitous malaria transmission. Through cross-sectional surveys, interviews, and analysis of malaria indicators between 2011 and 2014, the investigators detailed how the rates of outpatient visits and administered malaria treatments decreased during the Ebola-virus-disease epidemic, with larger decreases in Ebola-affected prefectures, how fewer than expected malaria cases were seen at health facilities in 2014 compared with previous years (an estimated 74 000 cases), and how this is likely to have led to an excess number of malaria deaths, almost certainly greater than the total number of deaths caused by Ebola virus disease in Guinea. Furthermore, and very importantly from a health system perspective, untreated malaria cases have placed an additional burden on an already overburdened health system through a greater number of suspected cases of Ebola virus disease requiring triage and isolation at Ebola transit and treatment centres.

The findings and analysis of Plucinski and colleagues are similar to our experience in the forest region of Guinea, where, in Sept 8, to Oct 4, 2014, we gathered similar, albeit anecdotal, evidence, suggesting that the Ebola epidemic was posing a public health threat, particularly for children. Health staff interviewed in Guéckédou and Kissidougou estimated that less than 25% of patients with malaria, pneumonia, or diarrhoea were seeking care at health centres compared with pre-epidemic values. Outpatient attendance of children younger than 5 years old at Kissidougou district hospital decreased from 200–250 per day before the epidemic to about ten to 12 per day in September, 2014. Information available indicates that monthly revenues at Guéckédou district hospital decreased from FGN35 million per month before the epidemic to FGN7 million for August, 2014. Also, immunisation activities slowed down substantially during the Ebola-virus-disease outbreak, while attendance rates at maternal clinics for safe delivery by pregnant women did not decrease.

Major disruptions in the functioning of the health system during epidemics are a known occurrence, and

have been documented during meningitis² and severe acute respiratory syndrome (SARS) epidemics.³ The effect of the 2014 Ebola-virus-disease epidemic on malaria morbidity and mortality has been documented by Walker and colleagues⁴ and Hamel and Slutsker.⁵ Reasons for the disruption are complex and are linked to both deviation of human and financial resources to contain the epidemic and to striking change in health-seeking behaviour. This change was certainly the case during the recent epidemic of Ebola virus disease when the marked drop in visits to health centres was at least partly because of the fear among the population about contracting the Ebola virus disease in the health centres and the credibility of the health system was at its lowest. Given that some disruption of the delivery of health services during an epidemic is unavoidable, which measures can reduce the negative effect of the Ebola-virus-disease epidemic on malaria morbidity and mortality?

The WHO Global Malaria Programme proposed measures to reduce the negative effect of the Ebola-virus-disease epidemic on malaria burden and released interim guidelines for malaria prevention and control in Ebola-virus-disease-affected zones in November, 2014.⁶ These guidelines recommend changes in testing practices, new approaches for long-lasting impregnated nets distribution to avoid overcrowding, and mass drug administration—ie, mass treatment of a large section of the population irrespective of symptoms—with artemisinin-based combination therapies in areas heavily affected by Ebola virus disease, where malaria transmission is high and access to malaria treatment is very low. Benefits of mass drug administration include a rapid reduction in the malaria burden for a certain period, and a decrease in the incidence of febrile illnesses due to malaria. This reduces the presentation of patients who are febrile at Ebola assessment facilities, results in a reduced risk of nosocomial transmission of Ebola virus to patients with malaria, and reduces the workload at those facilities. Mass drug administration with artesunate plus amodiaquine was used for the first time for 400 000 people in the most affected urban area of Monrovia, Liberia, and for more than 2 500 000 people in Freetown and the most affected areas of Sierra Leone. Furthermore, to restore the credibility

of health service delivery in the population, it is important that Ebola-virus-disease-specific activities in the communities, such as contact tracing and safe burials, are accompanied by the delivery of standard health services, such as distribution of long-lasting impregnated nets, vaccination, or community case management of child diseases with specific no-touch approaches appropriate to the context of the epidemic.

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I declare no competing interests.

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The WHO clinical case definition for suspected cases of Ebola virus disease arriving at Ebola holding units: reason to worry?



Ebola holding units were established at the peak of the 2014 Ebola virus disease outbreak in Sierra Leone when Ebola treatment centres were confronted with overwhelming numbers of cases and a dire shortage of bed capacity. The holding units were intended to temporarily admit and hold in isolation patients presenting with suspected Ebola virus disease while awaiting the results of confirmatory diagnostic testing. Individuals who tested positive for Ebola virus disease would then be transferred and admitted to Ebola treatment centres, whereas those testing negative would be discharged or referred to other routine health services such as emergency departments, general medical wards, or outpatient clinics.

However, the whole idea of Ebola holding units was controversial in the minds of many implementers. Unlike Ebola treatment centres, Ebola holding units typically did not have the facilities and infrastructure needed to ensure strict environmental controls and personal protection measures. Overcrowding was common and fear of nosocomial Ebola virus disease transmission was very prevalent. As the Ebola virus disease outbreak progressed, the number of suspected cases regularly exceeded bed availability in the holding units and patients often had to wait in a designated area for assessment and bed allocation. To try and mitigate this challenging situation, Marta Lado and colleagues¹

report in *The Lancet Infectious Diseases* on the clinical features of patients isolated for suspected Ebola virus disease at the Ebola holding unit in Connaught Hospital, Freetown, Sierra Leone. They aim to improve selection of suspected cases for admission to the Ebola holding unit by assessing whether or not presenting clinical characteristics in patients admitted to the holding unit were predictive of confirmed Ebola virus disease.

Lado and colleagues' study was a retrospective cohort study of 850 patients presenting at the Connaught Hospital Ebola holding centre between May 24, 2014, and Dec 8, 2015. They recorded the presenting clinical characteristics of these patients and the diagnostic

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See **Articles** page 1024



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